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Mexico's Mining Recession

IN the words of Sr. Jose Campillo Sainz, head of Mexico's Mining Chamber, " miners are men of faith who know how to fight against adversity ". This is admirably illustrated by Sainz's own expression of confidence in the future of Mexican mining at a time when the industry is faced with what he terms " the most severe crisis in the past fifty years," due to the uncertain economic climate in the United States (where the outlook, happily, is becoming progressively brighter), to reduced European buying of metals, and to the high local and federal taxes imposed on the industry at home.

As Sr. Sainz points out, a drop in the world price of lead by one U.S. cent means a loss of 55,000,000 pesos (approximately £1,560,000) for Mexico's industry, and a one cent drop in zinc prices a loss of 65,000,000 pesos (£1,860,000). Corresponding drops in other metal prices hit the national industry " very hard ".

World metal prices are, of course, a factor over which the country itself has no control. Taxation, however, is a burden which is capable of adjustments, possibly by spreading it more widely over other sections of the community, in order to assist a key industry which has been critically affected by a decline in prices and demand arising from a temporary phase of over-supply.

Despite the fact that the mining industry in Mexico is going through a particularly difficult period in its fortunes, it still pays the federal government approximately 1,000,000,000 pesos (about £29,292,300) in taxes. In the past ten years the industry has paid between 15 and 20 per cent of the total national taxes. In fact, Sainz describes it as the most highly taxed mining industry in the world and points out that this has made it impossible for it to compete favourably on the international market.

During the past decade exports of metals and minerals accounted for 36 per cent of the total value of all Mexican exports. Mining products are subject to a 28 per cent export tax, based on the last devaluation of the peso (quoted at 12.50 to the dollar), at which level it has been maintained since the surprise devaluation of April, 1953. In the past five years conditions have greatly changed, mine overhead costs having risen steeply as a result of upward spiralling transportation fees, cost of equipment, wages, and other charges. Sainz claims that the total elimination of this taxation, or at any rate a substantial reduction, is essential in order to give the industry " an effective stimulus ". If total abolition of the tax is deemed impossible by the authorities, he submits, it should be reduced by at least 75 per cent.

As an indication of the industry's importance and magnitude, it is pointed out that more than 2,000 mining firms, with a labour force fluctuating between 75,000 and 100,000 workers, are actively working mineral deposits ranging from precious metals to heavy industry metals. Their scale of activities varies enormously, at one extreme being the powerful American Smelting and Refining

Co., employing hundreds of miners, and at the other operations that are essentially one-man enterprises.

In 1957 the total output of all mining products was valued at 4,000,000,000 pesos (£117,169,200). Sainz estimates that the value of the 1958 production will be 6 per cent lower than these figures. Some estimates from official sources, however, suggest that the fall in the value of production as compared with 1957 may be as much as 15 to 23 per cent.

Mexico still holds the lead in world silver production, but the margin is shrinking steadily and in a few years' time the Republic may take second place to Canada. Mexico is also the second largest producer of sulphur, and the third or fourth largest producer of antimony, cadmium, lead and zinc. It comes eighth in the list of copper producers and ninth in gold.

Whereas in 1954 Mexico still had to import sulphur, the situation is vastly different at the present day, for saline domes on the isthmus of Tehuantepec are producing sufficient to meet all domestic needs and provide sizeable surpluses for export. Mexico has also been developing the production of potassium, phosphates and other minerals, including barytes and fluorite; annual production of the latter two minerals now grosses 500,000 tonnes.

So far as uranium is concerned, mining activity is conspicuous by its absence, for the government has decreed uranium deposits to be part of the national reserves. On this score Sainz makes the following outspoken comment: "This metal, formerly considered scarce in the world, has been shown to be more abundant than silver and gold. Therefore, there is no reason whatsoever why our country should not commercialize production of uranium ore under a system of adequate control".

Despite all adverse factors Sainz is by no means discouraged. He describes mining as "the geological destiny" of the nation, pointing out that, whereas the total acreage devoted to agriculture is but 12 per cent of Mexico's soil, mining deposits cover a wide area of the Republic. Many deposits, however, lie dormant and unexploited because of lack of communications, lack of power, and their location in inaccessible mountainous regions.

Contrary to views held by some other authorities, Sr. Sainz is an enthusiast for the participation of foreign capital in the mining industry. "It complements and does not displace Mexican capital", he states. To attract overseas investors, however, it is necessary to create a favourable financial climate, which has hitherto been lacking. A more helpful and constructive attitude on the part of the government, especially as regards taxation, is clearly essential for maximum exploitation of the immense potentialities for mining expansion which will undoubtedly exist once the world demand for metals and minerals resumes its upward trend.

Hopes are centred on the new administration and the "substantial aid" (credits, improvements of rail and road transportation, reduced freight charges, reductions in taxation, etc.) that may be approved, so that the mining industry can surge to the forefront again. The fundamental requirement is a revision of former policy, which has hindered foreign investment in Mexico. If the government has any serious intention of attracting foreign capital, the creation of a more favourable climate is essential. In addition to the elimination or reduction of the export tax, it will be necessary to give further consideration to such imposts as production tax, excess profits tax, income tax, etc., with a view to providing more substantial assistance than was afforded by the revision of the Mining Tax Law in 1957, which in the event proved to be more imaginary than real.

INDUSTRIAL RELATIONS IN AUSTRALIA

In this period of stress in the mining industry, writes our Australian Correspondent, it is pleasing to record evidence of co-operation between employers and employees in meeting difficulties which have arisen. A notable step has been recorded at Mount Morgan. There were many conferences in the early part of 1958 with union and local representatives of the company's tradesmen, assistants, and engine-drivers. Successful joint applications were made by the company and these unions to the industrial court to vary awards by deleting the copper price bonus and increasing wages rates to those payable generally to employees in Queensland. The company voluntarily proffered to all employees a bonus based on profits distributed to shareholders. This offer of a bonus was accepted by the employees in lieu of the bonus based on the price of blister copper.

This is the correct basis for a bonus, and it may be hoped that this settlement will influence revision of the lead bonus at Broken Hill and Mount Isa, and establish it in a relative position to distributions to shareholders. At present, the anomalous position exists with a bonus based on the selling price of lead, by mining companies operating at a loss, but continuing to pay a regular weekly bonus to their employees. Approach to this revision will be difficult on the Broken Hill field, but the time is opportune, and the reasonableness of the change should be apparent to most.

Indication of a reasonable spirit is suggested in the report of Broken Hill South Ltd., wherein it is pointed out that in February, 1958, in view of the state of the world's metal markets, there would be a reduction in working time equivalent to one day in each fortnight, which was accepted. In August, 1958, the companies agreed to a proposal submitted by the Barrier Industrial Council, representing the unions on the field, that the mines should close for one week every ten weeks and that the previous agreement be terminated. It may be hoped that other amicable steps to meet the difficult industrial position will follow.

DUBLIN BUYING MORE AMERICAN COAL

The consumption of American coal, which is about £2 a ton cheaper, now exceeds the consumption of British coal in Dublin. Some merchants say that about 90 per cent of their customers have switched to the American coal within the past few weeks.

The N.C.B. is perturbed about this situation, and it is expected that officials of the Board will visit Dublin within the next few weeks to discuss the matter with Irish importers, and to put before them some proposals that might help to increase sales of British coal.

The sale of American coal is spreading rapidly throughout the whole of the Irish Republic. The ports of call for the 10,000 and 15,000 ton American coal freighters are Dublin and Cork, but from these ports coal can be transported to merchants in inland districts and still sell more cheaply than British coal. The slump in sea freight rates is regarded as the main reason why American coal can undercut British coal in the Irish Republic. A few years ago, it cost about £5 a ton to bring coal across the Atlantic. Now the trans-Atlantic rates are about 27s. 6d. to 30s. a ton, while the transport of coal from Britain across the Irish Sea costs about 15s. a ton.

Requests to have American coal available to domestic consumers in Northern Ireland have been rejected by the Northern Ireland Government on the grounds that the policy of the British Government is to encourage the consumption of home-produced coal and to cut down foreign imports.

BRITAIN'S MINING MACHINERY EXPORTS—III.

The Changing Pattern of Export Selling

IN the previous article in this series, we discussed at some length our reasons for anticipating a substantial and possibly prolonged cutback in the demand from the home market for mining machinery. We turn now in this third article to consider why the pressure of demand for Britain's mining machinery *exports* from the "traditional" markets has been, and is likely to continue, diminishing. To say this is not to say that manufacturers' *profits* from these markets are necessarily diminishing, and indeed the royalties from a satisfactory licensing arrangement may well compare favourably with the net profit from exporting to the same market. Moreover, they are likely to be obtained with less demands on the time of senior personnel.

It is, however, with exports that these articles are concerned, and here it must be emphasized that we are describing a general trend, the components of which will differ widely. Thus the rapidity with which exports to the "traditional" markets decline will vary greatly as between countries, as also will the rapidity with which the decline is felt as between one class of manufacturer and another.

In practically no case are the countries which constitute Britain's "traditional" mining machinery markets (broadly the older Commonwealth and Colonial territories), areas with declining mining industries. Indeed a very large part of the growth in mineral production, which will be required in the next couple of decades, is likely to come from these traditional markets rather than the "new" markets which may not have developed their full potential in the shorter term.

However, for the British mining machinery manufacturer, the central point as regards these "traditional" markets is not the prospective expansion in their mineral production, but the fact that these countries have—even if only in comparatively recent years—achieved a substantial degree of industrialization, and in consequence are already themselves producing the bulk of the machinery and equipment required for their own mining industries.

When Did the Trend Begin?

It is not possible to pinpoint exactly when the British mining machinery manufacturer began to lose his dominant position as an exporter to those "traditional" markets where industrialization has made the biggest strides. In the case of South Africa and Australia, this trend probably received its main impetus during and just after World War II, when these countries were cut off from British exports vital to their mining industries, and which they were consequently impelled to turn to and make for themselves. In the case of India, the turning point probably came fairly soon after the granting of independence, first as a result of the various offers from other friendly powers of economic aid for industrial development, and more recently as a necessary expedient in the struggle to stabilize her balance of payments position. In other parts of the Commonwealth the trend towards reducing imports by local sub-assembly as well as the manufacture of simple piece parts is also discernible, added to which the expanding mining machinery industries in Australia and South Africa, no less than the aggressive selling of American, German, and Japanese manufacturers, must be expected to make further inroads in these markets.

The situation in Canada is somewhat different from other Commonwealth countries in that, for many years past, the very substantial machinery imports by her mining industry have been made almost entirely from the United States, and this sector of Canadian industry has consequently never been a "traditional" British market. On the other hand, the switch in Canadian import policy initiated by Mr. Diefenbaker a little over a year ago (which aimed at diverting about 15 per cent of imports from America to Britain or other non-dollar areas) could, if persevered with, result in a substantial Canadian market for British mining machinery. On the other hand, we may find that Canadian manufacturers, work-hungry since the recent recession, will themselves rapidly come to supply these requirements, especially if, in addition, American mining machinery manufacturers endeavour to establish factories within Canada to beat the Diefenbaker switch.

It is All a Matter of Degree

The fall-off in British mining machinery sales to the various "traditional" markets thus differs both in the degree to which it has progressed and in the tempo at which it is likely to proceed—all the way from South Africa, which is now supplying perhaps 80 to 85 per cent of all its own mining requirements, to (say) Nigeria or Tanganyika, where the process has scarcely commenced.

Similarly, the change has made itself felt far more among some categories of manufacture than others. Thus, while the older Commonwealth countries are now—or at least if necessary could be—entirely self-sufficient for such items as explosives, drill steels, chemical reagents, and small pneumatic tools, and are rapidly becoming so for larger items such as mine locos, conveyors, and the smaller electric motors, the bulk of the manufacturing work involved in, for example, a coal cutter or the installation of a new mine hoist, is likely still to be done in Britain.

Thus the manufacturer likely to be the least quickly affected by local industrialization will be the one supplying the more technologically advanced product or one needed in such small quantities as to be the least amenable to local manufacture on an economic scale. Nevertheless, even in his case, the trend is in the long run against him.

These typical changes in the pattern of buying are very largely outside the control of the British manufacturer, and certainly do not in themselves reflect unfavourably on the service he has been giving to the mining industry in these countries. They are quite simply the consequences of a maturing country's natural economic evolution.

Ingenuity is Always Exportable

At the same time, it would be a gross disregard of economic history to suggest that it is only a matter of time before the British manufacturer is squeezed out of these markets. A country in the early stages of rapid industrialization is nearly always in the position of wishing to advance on a broader industrial front than its own limited capital goods industries has the capacity to sustain, and it is thus faced with determining which products it is more advantageous to make locally, and which, within the limits of its trade balance, to import. In general, the products

with the minimum requirement of design and production know-how and expensive tooling and the maximum of semi-skilled or unskilled labour will be the first to get manufactured locally.

It follows that a major factor in retaining Britain's "traditional" mining machinery markets is the manufacturer's attitude of mind in matters of marketing and product development. His expectation of life in some of these markets may be short if his policy is to "sell what the factory makes". It may, however, be indefinitely prolonged if he identifies himself with the conditions peculiar to the mining industry of each country and shows ingenuity in helping the miner to find new solutions alike to old problems and to changing circumstances.

A Case in Point

The South African gold industry provides a case in point. It has often been stressed in these columns that, sooner or later, increasing demand for labour, European no less than African, in the Union's expanding secondary industries is going to force a much increased degree of mechanization on the gold industry, if planned milling rates are to be achieved. (The great potential for the mining machinery manufacturer in this market was brought out clearly in two articles headed "The Possibilities of Full Mechanization and Automation in Mining" in *The Mining Journal* of December 14 and 21, 1956.) Here is a challenge to British technical *expertise* which could eventually yield a rich reward to the manufacturer who anticipates the course of events by applying himself now to the preliminary research and experimentation required.

In many other overseas markets (in the "new" no less than the "traditional"), the growth of secondary industry will by drawing off manpower sooner or later necessitate a far greater degree of mechanization in mining than is at present necessary. Obviously the urge to conserve labour through mechanization is likely to be less immediate in India and some other Eastern countries than in the relatively thinly populated African continent. However, it is only necessary to see what is happening in China to realize how rapidly even a vast Oriental population can become fully committed where rapid industrialization is attempted without adequate capital goods.

On Climbing Over the Fence

In these observations on our "traditional" markets, we have, so far, been referring specifically to Britain's physical exports of mining machinery. Loss of exports need not, however, mean loss of profits. A few British manufacturers have their own well-established factories within South Africa, Australia, or India which are manufacturing and/or assembling locally (often with the assistance of some piece parts imported from Britain). A greater number are doing the same thing through local licensees.

Either way, the eventual net profit from these markets for the parent company in Britain may well be little less than it was when everything had to be shipped from home. Moreover, setting up shop inside these markets has given the local subsidiary or licensee a permanence and acceptability which under present political and economic conditions continued importation could not have sustained.

However, as it becomes increasingly necessary for the British manufacturer to operate inside a "traditional" market rather than merely to export to it, he is confronted with policy decisions of major importance. If he establishes his own local manufacturing company, what security has he for his investment? How much of his profits will he be allowed to take out? May he even, in some countries, be confronted later on with the risk of out-and-out expropriation?

If, alternatively, he manufactures through a licensee, he admittedly is not risking his own capital, but he may well have no effective legal protection against breaches of the licensing agreement, and, in any event, protection by international litigation is time-wasting, costly, and may well end in stalemate and loss of the market to some competing product.

Manufacturing Through a Licensee

On the basis of experience to date, it would seem that even so the British manufacturer has more often than not taken the view that local manufacture through a licensee constituted the lesser risk. Certainly this course has avoided the necessity of finding and hazarding new capital or of transferring valuable senior personnel away from the home factory. On the other hand, it has undoubtedly led in some cases to more or less overt piracy.

However, the hazards of manufacturing through a licensee can usually be mitigated if the licensee is encouraged to manufacture locally as much of the product as possible aside from certain key assemblies or piece parts for which tooling-up is particularly expensive, or which involve exceptional know-how in design or manufacture. So long as the manufacturer is supplying these key parts, he retains his hold on the licensee unless and until the licensee decides to break his agreement and manufacture them himself.

The larger the proportion of the product, which the licensee is encouraged to make locally, the less will be the incentive to break the agreement for the sake of the additional profit from manufacturing the remaining "difficult bits". In short, if the manufacturer gives the licensee the bulk of the work, the latter will think twice before defaulting on his royalties at the cost of losing the competitive technical advantage in his local market through having access to the licensor's design and development resources.

Trend Towards the Internationalization of Export Selling

Through whatever channel it may have come about, the trend towards local manufacture has resulted in the home factory capacity previously used to produce these exports becoming increasingly available for other markets precisely at the time when it is so politically desirable that the British manufacturer should be free to turn his attention increasingly to the requirements of the "new" markets provided by the more backward territories, both inside and outside the Commonwealth. In the fourth article in this series, we shall be examining some of the problems of selling in the "new" markets. Before doing so, however, it is as well that we should examine some changes of special significance for these "new" markets, which are taking place in the pattern of export sales organization, not only among many British mining machinery manufacturers, but also as between them and their competitors in other Western countries.

The success with which British mining machinery exports may find their way into both "new" and "traditional" markets, as well as into the apparently static markets in the United States and Western Europe, may be considerably influenced by a marked change which has been taking place in the composition of the British mining machinery industry since World War II.

The past ten years have been notable for the number of American manufacturers who have established factories in Britain. In some cases this has occurred as a necessary prerequisite to selling to the N.C.B., but always there has been the additional attraction of lower British labour and material costs in manufacturing for export to the rest of the sterling area, as well as to other markets where selling for dollars was becoming more difficult.

The American manufacturer has, in short, been doing in Britain in recent years precisely what the British manufacturer has had to do in South Africa and Australia in order to remain competitive with (or in some cases anticipate) local competition.

Up to a point, this development has meant heightened competition for the indigenous British manufacturer, but it must be remembered that even before the days when there was so much American capital directly tied up in British mining machinery production, a great deal of mining equipment produced in Britain was made under licence from American companies, in the same way that much equipment of British design is, and has long been, manufactured under licence in other parts of the world.

Moreover, from the point of view of the British economy as a whole, British exports are welcomed as such at the Board of Trade and by the Chancellor of the Exchequer irrespective of where the financial control of the factory concerned may reside.

The Concept of "Selling Western"

It is, of course, particularly in Britain's "new" markets that the economic consequences of the cold war are to be encountered. The essence of the problem in these markets was summed up graphically by a manufacturer, who remarked recently, "We sell British if we can, but if we can't, then at all costs we sell Western!" This seems to be typical of the new thinking among British exporters, who realize—often better than Whitehall—the vital role which they have to play in combating Russian influence in the uncommitted areas of the world. The British manufacturer who is organized to "sell Western" as advantageously to himself as he can "sell British" is in the best possible position to play his part in the West's economic counter-offensive.

In this respect, as political tensions have grown since World War II, and as aid with strings leading back to a particular country has become more common, it has been a marketing factor of great importance that machinery of identical design could be available from alternative sources either by the setting up of new factories inside certain trading areas or by licensing arrangements.

Aside from the barriers of tariff and quota, the growth of foreign aid with strings to underdeveloped countries, coupled with the fluctuating cordiality of international political relations, combine to set a premium on the mining machinery salesman having the right nationality for a particular market at a particular time. Consequently the advantage of being able to go into any given market wearing an English or an American, or even a French or German hat, as circumstances dictate, is beginning to set a new pattern in international sales co-operation.

It follows that for a manufacturer to dispose of the manufacturing and sales rights of a product to a licensee over a whole continent or group of countries is no longer a sufficiently sensitive marketing device. Moreover, arrangements between the licensor and licensee must be sufficiently flexible to allow each to go in and sell in the other's territory where it is agreed that the conclusion of the sale might otherwise be jeopardized.

American, British, and Continental manufacturers alike have now to reconcile themselves to the fact that there are parts of the world in which each can only sell on his own at a considerable disadvantage. In such countries it is far better for him to be at least assured of royalty payments so that he can then concentrate all his export sales resources on to those areas of the world where he can sell with relative ease. Moreover, provided the terms of the reciprocal sales agreements are both sufficiently flexible and sufficiently rewarding to the licensor, there will be every incentive for close collaboration between the associated companies both in identifying sales prospects and in effecting the sale irrespective of the sales territory in which the mine nominally lies.

Such Co-operation Can Snowball

Quite apart from these more obvious advantages of closer international sales co-operation, the British partner of such an arrangement may well derive additional benefit from being able to manufacture part of an order for what may be strictly an American market, because British cost structures will enable the American partner to quote a more competitive price than he would be able to do from his own factory. This is already happening in a number of British factories which are manufacturing under licence from America, and there are even cases where the British factory is being encouraged to sell in the Canadian market competitively with the American factory, both on considerations of price and in order to meet the Diefenbaker switch referred to earlier.

Again, economies in production may develop to mutual advantage by some degree of specialization in the manufacture of particularly expensive items or items where one partner has special facilities or *expertise*. Equally, research and development can be accelerated by pooling experience and avoiding duplicated effort.

The Prime Contractor at Home—

Another element, which is beginning to enter the pattern of British export selling to the mining industry and which may be of considerable significance for the future, is that the prime contractors who have in recent years been acting in that capacity for the N.C.B. are beginning to turn their attention to similar opportunities in overseas markets now that their temporary usefulness to the N.C.B. in this capacity appears to be past.

These prime contractors (they number, perhaps, five or six) have tended to be firms which were themselves substantially interested in the manufacture of one or more of the principal items of mine equipment. On the other hand, there is no inherent reason why this need be so, as the principal function of the prime contractor to the N.C.B. has been to give effect to the Board's blueprints for new pits in respect of surface installations and the sinking and equipping of shafts. Primarily, the services required have been those of preparing schedules of equipment and work for tender, assigning contracts, and supervising the quality and timing of the subcontractors' plant and machinery deliveries, as well as of the final on-site erection.

The reasons for the emergence in British mining of the prime contractor as something apart from the N.C.B. organization have some relevance to the export problem. In the first place, the Board was reluctant in the short term to overload its own establishment with planning and other skilled personnel, which could be expected to become redundant once the special effort needed for the initial impetus to this programme was over, and once the "ladder

plan" was beginning to bring forward a steady flow of younger, qualified mining engineers within the industry. Secondly, the Board had inherited established buying patterns between certain groups of pits and certain manufacturers which it was anxious to modify. This it was in practice easier to achieve through the agency of some independent prime contractor, unhampered by associations which had often been built up over a great many years.

—and Overseas

Some of these prime contractors believe that overseas, more especially in the "new" markets, there is considerable scope for their performing similar services. Outside of those areas of the world where the big Commonwealth, American, or Continental mining finance houses are active, the problems of planning a new mine and getting it to the production stage present difficulties with which an underdeveloped country is likely to be much less able to cope expeditiously than it would with the subsequent problem of operating the mine. In the initial stages, a considerable team of planners, purchasers, and contract supervisors are required, whose services can gradually be dispensed with once the mine is past the development stage.

In Southern Africa, Malaya or Australia, these services and personnel would normally be provided by the centralized resident consulting engineers' departments and purchasing department of the big mining groups. However, in the absence of such group organization in the "new" markets, the prime contractor could well perform an important function. There is no suggestion that he could or should in any way provide a substitute for the mining consultant, but merely that working in conjunction with the consultant, he can offer to the owner of a new property experienced and integrated services, which will greatly accelerate the early development of the mine without straining the possibly limited resources of technical personnel in the country and without encumbering the new mine with a large planning and purchasing staff which it will not eventually require.

Further, the fact that the employment of such prime contractors would be for only a limited period could, in some cases, greatly ease the difficulty of employing large numbers of Europeans where such a policy might otherwise be repugnant to the country's newly-found sense of independence.

It goes without saying that such a country would not appoint a British prime contractor unless it was prepared to buy British for, at any rate, a large part of its equipment. Moreover, once this initial step has been taken it is clearly very much easier both for the owner of the mine and for the various manufacturers in Britain to deal with a prime contractor with whose methods of operation they are already familiar.

Incidentally, it will be recalled that in the first of these articles ("Mobilizing the British Mining Consultant", *M.J.*, October 17, page 413) we drew attention to the demands frequently made on the mining consultant's staff by underdeveloped countries for services not strictly of a consultancy nature by virtue of the non-availability of indigenous skilled personnel. In such cases, the introduction of the prime contractor could greatly ease the load on the consultant's staff.

It thus appears possible that the emergence of the prime contractor might provide at least a partial solution to several related problems. The prime contracting organizations would themselves be kept in being where otherwise their personnel might become dispersed. As such, they might form a most useful link between the mine owner and his consultant on the one hand and the manufacturer on the other—at least in some of the "new" markets. This is a service which could be of special value in the next two or three years to those manufacturers who have hitherto been selling primarily to the home market, and are reorientating their policies and their organizations to the requirements of export selling.

—and in Relation to the Manufacturer

We do *not* suggest that the prime contractor should in any sense become the export sales unit for some formal consortium of manufacturers, as this would inevitably limit the sources of manufacture on which the prime contractor would tend to rely and might consequently prejudice the mining consultant against recommending his client to make the appointment. Provided, however, that the prime contractor remained substantially uncommitted, he would be free to purchase the machinery and equipment specified by the consultant strictly on merit.

Once the stage was reached where one or more British prime contractors became successfully established in a territory, they could effectively free the machinery manufacturer from much of the expense and effort involved in export selling in that territory. True, the manufacturer would still have to sell his product in competition, but at least in the initial stages of tendering he would need to go no further than the prime contractor's design and subcontracting departments. It follows that the manufacturer would be saved very considerable sales expenses, more especially in those cases where his tender was unsuccessful.

In the first article of this series, we examined the whole problem of British mining consultants having to quote uneconomic fees in competition with American, French, Russian or German consultants, who, in various ways, are able to offer subsidized services. If the concept of the prime contractor catches on in some of the "new" markets, the same problem will undoubtedly arise in their case.

It might, thus, repay the manufacturers to explore the possibility of subsidizing prime contractors in those markets where the latter are themselves likely to have to quote a sub-economic scale of fees if they are to have any chance of being appointed.

One of the more obvious difficulties to be resolved would be the basis on which to raise the subsidy. The simplest basis—that of a manufacturer's discount to the prime contractor in respect of sales to specified markets—is likely to be objectionable on the grounds that such financial considerations can lead to bias. Any more indirect schemes would, on the other hand, require co-ordinated action by some—if not all—the manufacturers concerned.

At this point we are confronted with the absurdity that, as yet, no trade association has been appointed to serve as the focal point for the collective export interests of all manufacturers selling to the mining industry. This, perhaps, is one of the reasons why the difficulties alike of the mining consultant and of the mining machinery manufacturer are apparently not being argued with greater energy in the various government departments, which must surely be acutely concerned to see that British technical aid and capital goods are holding their own in those "new" markets where the successful penetration of British influence is as important today on political as it is on economic grounds.

[*In the next article in this series, scheduled to appear in a February issue, we shall consider some of the problems involved in selling to the "new" markets.*]

McIntyre Foundation Conference on Silicosis

A second set of papers presented at the McIntyre Research Foundation Conference on Silicosis and Other Industrial Pulmonary Diseases, held in Toronto on January 27, 28 and 29, 1958, has now been received. These were preceded by an introduction by D. A. Irwin, M.D., Medical Director, Aluminum Company of America, to the two original papers, entitled "The Prevention of Silicosis by Metallic Aluminium", published some years ago over the names of Denny, Robson, and Irwin, dealing with the early investigations into silicosis and animal experimentation in connection with its prevention, which, the Foundation believed, would bear review.

THE conclusions drawn from the first of these original papers were that there was a great difference in the solubility of various types of siliceous materials, the solubility of quartz being increased by the presence of small amounts of carbonates and hydroxides of magnesium, sodium, potassium, and calcium, and reduced by large amounts of calcium hydroxide, though this was entirely dependent on the strongly alkaline reaction. It was also shown that the addition of small quantities of metallic aluminium dust almost completely inhibited the solubility of siliceous material in a beaker. Seven rabbits dusted with quartz to which less than 1 per cent of metallic aluminium dust had been added showed practically no fibrosis, while six control rabbits, dusted with quartz only, showed well-developed silicosis.

In the second original paper reviewed, it was shown that metallic aluminium, on being converted into hydrated alumina, reduced the toxicity of quartz in tissues by flocculation, by adsorbing silica from solution, but chiefly by coating the quartz particle with an insoluble and impermeable coating of a gelatinous hydrated alumina, which, on drying, formed the crystalline alpha aluminium monohydrate, Boehmite ($Al_2O_3H_2O$). No animals, whose lungs on analysis contained 1 per cent or more of metallic aluminium, had shown any evidence of silicosis up to periods of seventeen and a half months, in contrast to well-developed silicosis in the quartz control rabbits in seven months. In lungs, where hydrated alumina was shown on staining to be intimately and uniformly mixed with the silica particles, fibrosis had never been found.

It was concluded that aluminium dust for the prevention of silicosis should be of a particle size below 5 microns and be grease-free; it should be uniformly mixed in any inhaled dust and bear a definite percentage to the dust at all times, being sufficiently concentrated to provide a minimum concentration in the lung of 1 per cent at all times; to prevent silicosis, aluminium dust may be inhaled daily independently of the siliceous dust, such inhalations over long periods having shown no effect on the general health of animals and no evidence of toxicity or damage to tissues.

A Biochemist's Approach

Colin C. Lucas, Ph.D., a biochemist with the Banting and Best Department of Medical Research, University of Toronto, then gave a paper entitled "A Biochemist Views Silicosis", which discussed the chemical action of the quartz dust in causing silicosis. After mentioning and rejecting the "mechanical theory", whereby it was thought that silicosis was caused by laceration of the tissue by the sharp quartz edges, Dr. Lucas spoke about the "chemical theory". He said that, of the four possible forms of free silica, King, Mohanty, Harrison, and Nagelschmidt had established, in 1953, that tridymite produced the most fibrosis, crystobalite produced less, and quartz still less, pulmonary damage, while dust of fused silica (the amorphous form) produced least fibrosis.

Dealing with the solubility of quartz, he said that the term "solubility" should not, strictly speaking, be applied to silicate minerals, because water did not dissolve them *in toto*. A chemical reaction occurred with the water and then differential solution, or leaching, took place. Experiments with high-quality quartz had shown that "solubility" of the quartz was affected by the size of the particles used and by the amount of dust present. Such findings were usually taken to mean that two or more compounds were present. This could be accounted for (1) by an impurity in the quartz, or (2) by a reaction between the solvent (distilled water) and the quartz, or it could mean (3) that the smaller particles, which were more numerous the larger the sample taken, had a higher rate and also a higher limit of solubility, although this could represent a metastable condition. There was, in fact, evidence for all three influences being at work.

Dr. Lucas said they found that the "solubility" of quartz and of several silicate minerals in salt solutions, in urine, and in blood serum resembled the values in water. Mica, sericite, and asbestos gave up very little SiO_2 to the solvents; microcline and albite gave up considerably more. Bremner, King and Roman, and Whitehouse had noted that if certain shales and other mineral dusts were included with the quartz dusts, the amount of SiO_2 going into solution in water or body fluids was depressed. This decreased solubility might account for Haldane's "antidotal dust" effect, Kettle's conversion of quartz dust to an innocuous material by coating it with iron oxide, or the protection afforded experimental animals by simultaneous dusting with powdered aluminium, reported by Denny, Robson, and Irwin.

Dr. Lucas then mentioned alternatives to the silica solubility theory, including the surface activity theory and the possible preferential adsorption of protein enzymes and the protein immune bodies in blood plasma by quartz dusts which could cause alterations in the metabolism of cells containing quartz particles or surrounded by them.

He concluded by saying that, though none of the suggestions mentioned accounted for all the known facts, a new picture was emerging of how quartz dusts or their soluble products may affect the labile proteins of the body (such as the immune bodies and enzymes) to produce metabolic alterations with deleterious end-result. The newer discoveries indicated that it was time to abandon any simple "chemical solubility" hypothesis. Present knowledge suggested that one based on surface activities, i.e. physico-chemical-immunological interactions may prove highly profitable. He said the acute toxicity of finely powdered quartz dust, when injected intravenously (so-called silica shock) had been known for years. A more detailed study of this apparently unrelated phenomenon might have supplied clues to the initial steps in the production of the silicotic lesions. The fact that cortisone (which was known to inhibit the proliferation of connective tissue) had a delaying effect on the usual macrophage response to intraperitoneal injections of quartz dust and an inhibitory effect on the development of fibrosis suggested that silicosis may be related to the recently discovered "collagen diseases".

Among other papers presented at the Conference was one entitled "Some Observations on Silicosis Statistics in Ontario", by W. C. Wheeler, B.A., and A. H. Sellers, M.D., D.P.H., Chief Statistician and Consultant Medical

Statistician respectively to the Workmen's Compensation Board for Ontario. This gave further useful findings in respect of the incidence, prevalence, progression of, and mortality from silicosis in Ontario mines.

A numerical coding scheme had been adopted for use by medical examiners in reporting chest X-ray findings, code numbers "4" and "5" representing "generalized aborization" and "generalized aborization with partial mottling" respectively. These represented the first signs of silicosis and were the ones mainly concerned in the collation of data by the statisticians, the special significance of new "5" ratings being its closest approach to the incidence of silicosis.

The report stated that the numbers of "4" and "5" ratings had gradually increased until a peak period of 1940 to 1944; a decided decline was noted in 1945 to 1949, and a particularly steep reduction in 1950 to 1954. The number of new "5" ratings in the ten years 1945 to 1954 was about the same as the number reported in each of the preceding three five-year periods. The absolute number of new "4" and "5" ratings had been comparatively small since 1949—there were only 58 new "5" ratings during the five years 1950 to 1954, and 32 new "5" ratings during the two years 1955 to 1956.

Concerning incidence (number of new cases of any condition arising in a given population during a specified interval of time) as distinct from prevalence, figures closely depicting this showed a peak in 1941 and an encouraging but irregular decline over the years. Some indication of a slight, though proportionately great, upturn seemed to be suggested since 1951, and the numbers of new "5"s for 1955 and 1956 remained above the level of 1951 and 1952.

Detailed statistics covering such aspects as year of first Ontario exposure, variation in the length of exposure, time intervals by age, mean time intervals, etc., were then presented. Although the mean exposure time had increased from 14 to about 20 years, the facts suggested a lower incidence, but not the effective prevention and control of silicosis.

Industrial Hygiene in Uranium Mines

"The Industrial Hygiene Aspects of Uranium Mining in the Algoma District" was the subject of a further paper presented at the Conference by E. B. Gillanders, B.A., Ph.D., Executive Vice-President, Rio Tinto Mining Co. of Canada Ltd. Rio Tinto is associated with four companies in the East Algoma or Blind River area of Canada, having plant capacities of 1,500, 6,000, 9,000, and 3,000 tons per day respectively, and contracts with Eldorado totalling almost $632,000,000.

Dr. Gillanders said that most of their development had been accomplished in the past three years. In the general rush, their hygiene programme still left something to be desired, but it was their policy to provide safe air for their workers. Helping with the problem was Reuben Yourt, one of the best in this field in Canada.

Of the four main air contaminants: uranium oxide, airborne radioactivity, siliceous dust, and diesel fumes, the first two were common only to uranium mines and, fortunately, were minor problems. Concerning siliceous dust, however, the Rio Tinto ore was a highly siliceous conglomerate in quartzite, and strict control must be applied to maintain the current low incidence of silicosis in Ontario. The dust was dispersed at all mining operations.

Control of dust was the company's toughest hygienic problem, and measures to control it adequately would, they believed, look after the other contaminants. Dust suppression measures included automatic air and water valves on rock drills (without hand valves); vented frontheads on rock drills; water blasts following blasting; frequent wetting during scraping and loading; flannel filters at ore dumps and passes (some ordered from South Africa); exhaust systems to crushing, screening, and sample preparation facilities with total capacity of 200,000 c.f.m. at seven mines. Other methods were being tested along the lines of published recommendations by the Committee on Silicosis, and aluminium therapy was used at each mine when permanent dry facilities were available.

Special ventilation measures were used to disperse diesel fumes, especially nitrogen dioxide.

Particular attention was also being paid to general mechanical ventilation as an integral part of mining development and mine layout. A few of the shallower mines were able to adopt the ideal push-pull system recommended by the engineers of the Committee on Silicosis. This consisted of a main fan on the surface supplying a plug of fresh air between the shaft and the ore zone. Leakage through doors kept the shaft upcast, but the major portion of the air circulated through the workings before being removed by exhaust fans at the extremities of the orebody. At the deeper mines, the air had to go down one shaft and up the other, with the inherent disadvantages.

This year, about 1,500,000 c.f.m. could be circulated through the seven mines in the Rio Tinto group. This would require a potential fan capacity of around 4,000,000 c.f.m. and 4,000 motor h.p., because the air was handled by three fans in series in the deep mines. One was located on the surface to supply air to the downcast shaft through a tunnel, and a second and third were located near the bottoms of the downcast and upcast shafts. The quantity of air circulated amounted roughly to 100 c.f.m. per ton per day.

Auxiliary ventilation for headings and other operations beyond the reach of general ventilation employed about 230 electric fans underground, ranging size from 15 to 38 in. in diameter. Most of them were 19 in. in diameter, with capacities of from 3,500 to 7,500 c.f.m. each. They operated with miles of pipe, mostly metal, though some flexible pipe was also used.

The combined exhaust and blowing, or overlap, system was considered preferable in long headings or where a return circuit was available for the discharge of contaminated air. Otherwise, the straight blowing method was used.

It was recognized that a flow of air of 40 to 50 linear ft. per min. must sweep the operation face successfully to dilute and remove contamination. Implementing this in rush programmes was difficult, but efforts were being made to make it standard practice as soon as possible.

East/West Coal Exchange

ARRANGEMENTS have been settled on a barter deal between East Germany and the Federal Republic under which the East Germans will exchange brown coal briquettes and wheat for some of West Germany's surplus hard coal. Although this deal has been in the offing for some considerable time, the East German authorities effectively put the brake on negotiations by insisting that the Federal Republic should sell their coal at U.S. prices—currently some 20-30 per cent lower than internal prices. A compromise, on the basis of rebate payments by the West German authorities, has proved sufficient incentive to the East Germans and in the coming year it is expected that the volume of trade between the Republics will measurably increase.

Malayan Diary

THE Budget Session of the Federation of Malaya Legislative Council opened on December 3 and continued until December 13.

The statement of government policy contained in the traditional Speech from the Throne referred to the tremendous progress made towards ending the terrorist campaign, which is now half-way through its eleventh year. His Majesty the Yang di-Pertuan Agong said that there had been 781 eliminations of terrorists since Merdeka (Independence Day), many centres of resistance had been smashed and two-thirds of the people living in the country were now living in areas freed from terrorists and emergency regulations.

On the subject of the mining potentialities of the Federation of Malaya, His Majesty said: "The report of the recent aeromagnetic survey carried out with the help of the Canadian Government, the examination of which has almost been completed by the Geological Survey Department has increased the government's knowledge of the mineral potentialities of this country. The prospect for iron mining inspires confidence, as do the prospects for the tin industry, which is passing with admirable steadiness through a very difficult period. The operation of the International Tin Agreement, which the government and the industry as a whole accept as being in the long-term interest of the industry, has restricted this year's production to 54.3 per cent of last year's."

Deficit Budgets

The Minister of Finance, Sir Henry Hau-Shik Lee, K.B.E., J.P., introducing his budget, said that it had been framed in the context of adverse economic circumstances. The major factor had been the set-back in the tin industry. He said that he did not share the view that there was likely to be a secular decline in the demand for tin. On the other hand, he could not foresee any material improvement in conditions in the immediate future.

The receipts from the export duty on tin, owing to the restriction on exports, would fall short of the original estimate for 1958 by about $M23,000,000. The Minister estimated the net deficit for 1958 at about $M90,000,000. His 1959 estimate for ordinary income and expenditure was a further deficit of $M114,000,000.

The Minister had based his estimates for income from export duty on tin and tin-in-ore in 1959 on the assumption that restriction of exports at the current level would continue throughout 1959. His estimate of exports was 745,300 piculs of tin ore, the equivalent of about 33,200 tons of tin, at an average Singapore price of $M360 a picul, which corresponds with the floor price of £730 a ton under the International Tin Agreement.

Taxation Changes

It was something of a shock to the mining industry, among others, to be told that the government proposed to increase the rate of tax for companies from 30 per cent to 40 per cent.

The Minister excused the apparent inconsistency in the government's avowed desire to attract overseas capital and in the decision to increase tax on companies, by saying that the government had taken into account the effects of the increase on companies which were liable to taxation in other countries which had double taxation agreements with the Federation. The government had also in mind the recent United Kingdom legislation, whereby companies resident in the United Kingdom which are carrying on the bulk of their business overseas are exempt from United Kingdom tax on their trading profits and accordingly pay tax only in the territories where their operations are conducted.

Tin, The Pillar

The Minister of Commerce and Industry, Mr. Tan Siew Sin, in dealing with the matters falling within his portfolio, reminded honourable members that tin, with rubber, formed the pillars on which rested the economy of the Federation of Malaya. It was the view of the government that they would so remain for a long time to come. The obvious thing to do, therefore, was to increase the production of those two commodities.

The Minister made some interesting comments on the International Tin Agreement, of which the government continued to be an active supporter.

He pointed out that contributions to the buffer stock were being paid by the industry, and it was the industry which in the end would own the tin represented by the Federation of Malaya's share of the buffer stock.

The Federation Government gave an assurance to the industry that the position of the Special Fund was being very closely watched, and that its resources would not be utilized in any way which would be prejudicial to the interests of the producers who had contributed vast sums of money to the buffer stock. Furthermore, the Malayan tin mining industry was assured that there would be no possibility of speculation on the market by private interests in connection with the operation of the Special Fund.

Iron Ore

The Minister went on to express a distinct possibility that iron ore production would be increased in Malaya, largely due to the efforts of a large company which intends, during the course of the next few years, to open up a new mine in South Pahang with an estimated yield of 1,500,000 to 2,000,000 tons annually.

Natural Resources Development

On the last day of the Budget debate the Minister of Natural Resources, Inche Bahaman bin Samsudin, presented the estimates for his Ministry. He told the honourable members that the government appreciated the urgent need for a national land policy and that they could expect an early statement on the government's mining policy. He said that the Federation Government and the State Governments were willing to do all they could about land problems but they were not able to do it quickly.

The National Land Council had met four times, he continued, and had discussed, among other things, increased areas for mining. Working parties were examining policies. Most of the recommendations in the Land Administration Commission's report were to be implemented.

He was told by representatives of the mining industry that unless something definite was soon done about the land policy the present unsatisfactory position would quickly deteriorate and he was urged to give this matter priority. Strong pleas were made for liberalization of the prospecting policy.

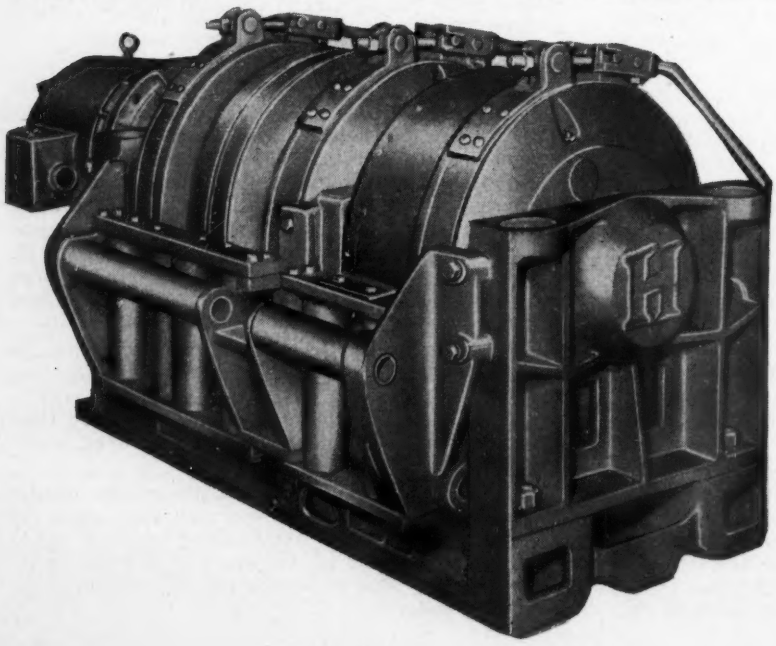
Machinery and Equipment

New Scrapehauler Range

The introduction of a new 20-30 h.p. Scrapehauler range by Holman Bros. Ltd. marks not only the completion of their present range of scrapehaulers, which are between 10 and 50 h.p. capacity, but also presents for the first time a scrapehauler more modern in design than any yet seen. The new design, which includes certain unique features, is also being incorporated in the range of Holman Scrapehaulers already in existence, which is soon to be extended to 100 h.p. capacity.

The new 20-30 h.p. Scrapehaulers are made with two or three drums with in-line electric motors, base or flange mounted. When space is an important consideration, an alternative design, also introduced for the first time by Holman Bros., can be provided. This differs from the standard 20-30 h.p. scrapehaulers only in the placing of the motor assembly and the use of a different gearbox. The electric motor is flange mounted to the gearbox housing in parallel with the scrapehauler drums and behind the handles of the toggle mechanism. The efficiency of this two or three drum unit is not affected by this alternative form of transmission.

The new 20-30 h.p. Holman Scrapehauler

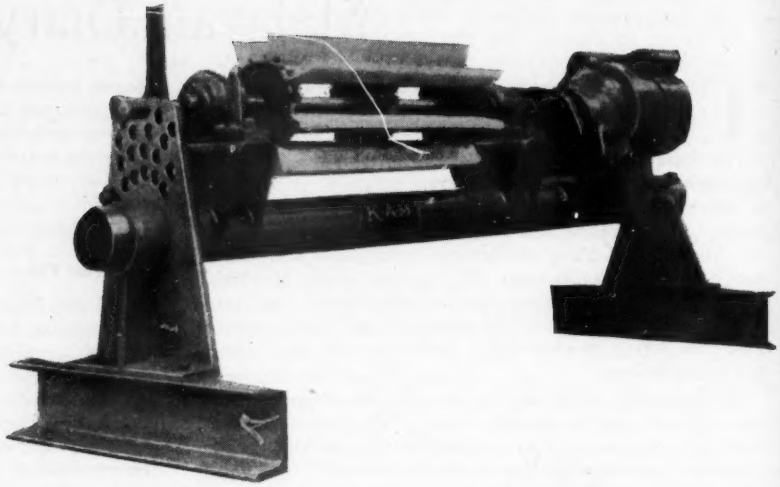


Exacting tests have been carried out with two and three drum base mounted, flange mounted, and "square designed" scrapehaulers, and have resulted in rope-pull figures of 2,540 to 3,840 lb. (with drum half-full of rope) at rope speeds of between 190 to 360 ft. per min. The drums have a rope capacity of 680 ft. of $\frac{1}{2}$ in. rope, or 430 ft. of $\frac{5}{8}$ in. rope, and are fitted to all types.

ELECTRIC VIBRATORY EQUIPMENT

The electric vibrators manufactured by Riley (I.C.) Products Ltd. are presented as providing a cure for choked bins and hoppers. These Syntron units are also claimed to speed up sluggish-flowing materials. Vibration is effected by electro-magnetic means with variable amplitude control.

Syntron heavy tonnage feeders can handle up to several hundred tons an hour. Control gear provides feed regulation. Models range from the provision of a maximum capacity of 2 tons per hour of sand to 500 tons per hour of sand.



The K.A.M. brushing unit

CONVEYOR BELT BRUSH UNIT

The K.A.M. unit, a development of the Kez-strip conveyor belt brush, manufactured by The Kleen-e-ze Brush Co. Ltd., can be installed (generally with only four bolts) on existing fittings.

The brushes used are claimed as efficient and hard-wearing. A 3-phase, 50 cycles English Electric motor (totally enclosed), operating on 400/450 v., drives the brush. A flameproof unit can be supplied, for use in mines, which complies with H.M. regulations. These units are proving successful in many branches of industry handling a wide variety of materials, including coal, coke, iron ore, slurry, and sinter.

POLYVINYL CHLORIDE PIPING

Over the past twenty years, the development of rigid P.V.C. piping has seen great progress. Its increased usage may be considered as arising from its excellent resistance to corrosion and chemical attack, the development of a highly effective jointing technique, and the wider scope offered since the advent of high impact polyvinyl chloride.

The P.V.C. piping manufactured by David Moseley and Sons Ltd. is described in an interesting brochure recently issued by the company. These pipings may easily be envisaged as playing an interesting role within the mining industry, and in addition to the benefits already mentioned the manufacturers state that their product resists ageing, that it is non-toxic and inert, and that all demands of installation—lightness, rigidity, threading activity, and welding—are considerations of construction.

While the choice of pipes for a particular installation naturally depends largely on the major characteristic required, it is stressed that normal impact P.V.C. pipes (for temperatures up to 150 deg. F.) have a greater strength over a wider temperature range.

High impact P.V.C. pipes are made from a modified P.V.C. The addition of copolymer to obtain a higher impact strength has succeeded in giving great resistance to shock loads and alternating pressures. There is a slight loss in temperature pressure and chemical resistance, but used at pressures below its yield pressure, high impact P.V.C. will stand alternating pressures even at low temperatures at which normal P.V.C. tends to brittleness. The maximum temperature is 130 deg. F.

These pipings can be envisaged in many applications within the mining industry, as their main attributes, resistance to chemicals, corrosion and temperature, seem to offer solutions to problems that are ever present in the winning of ores and metals.

A NEW DRILL UNIT

A drilling innovation has reduced accidents at the Lavender pit of Phelps Dodge Corp., Copper Queen Branch, in Arizona, by eliminating the need for drill operators to climb muckpiles and thus slip or suffer foot injury from broken drill steel. At the same time, the device has greatly increased drill footage per manshift.

The new device, named the Travel Drill, consists of a self-contained mobile unit mounted on two front-drive wheels and one dolly or caster rear-steering wheel. Compressed air for the drills, drive, and other control mechanisms, is furnished by a 230 c.f.m. compressor driven by a diesel engine through a V-belt drive. A small, air-driven hydraulic pump with accumulator and control valves moves the rock drill and a cylindrical tank supplies water that is necessary for wet drilling.

The control cab hangs below the trolley to which is pivoted the 3-in. automatic drifter with a 4-ft. feed screw. Both trolley and cab ride under a 40-ft. tubular boom. Drilling muckpile boulders or 30-ft. embankment brows is made possible by running the carriage up the boom and raising the boom, or by hydraulically elevating the end of the drill. Horizontal spotting is accomplished by two small hydraulic cylinders which swing the drill through 104 deg., or by turning the entire rig by the rear-steering dolly wheel.

A NEW DUMPER

Motor Rail Ltd. announce the introduction of a new dumper. Designated MR-4, the model is entirely designed and built by Motor Rail and has certain interesting features. These features include a level-loaded capacity of 3¼ cu. yds. and a heaped capacity of 4 cu. yds. with a full loading of 5 tons, fully reversible steering. The driver always faces the direction in which he is moving, a feature which saves valuable time on shuttle services or operations in confined spaces. No time is lost in reverse manoeuvring or turning round. Construction will withstand the roughest of site conditions.

A Dorman 2LB diesel engine powers the MR-4 dumper. It is of the very heavy-duty type, employing wet cylinder liners and a very comprehensive fuel and air filtration system to ensure trouble-free service and prolonged life. The pressurized cooling system is thermostatically controlled, water is circulated by pump and a radiator fan assists cooling.

The MR4 Dumper

The drive to the fully floating, heavy-duty driving axle is through a constant mesh gearbox and a 17½-in. dia. single dry-plate clutch, both of MR construction. There are three forward and reverse speeds, engagement being by sliding dogs.

The skip is of all-welded construction, fabricated from rolled steel plate—$\frac{3}{16}$ in. sides and ¼ in. bottom—and stiffened at the corners with rolled steel angle plate. The following speeds are obtainable: 1st gear, 5 m.p.h.; 2nd gear, 9 m.p.h.; 3rd gear, 18 m.p.h.

CONVEYOR BELT WIDTH

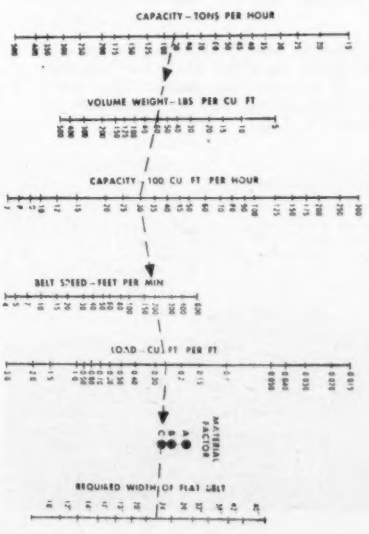
The accompanying nomograph, prepared by the Sandvik Steel Band Conveyor Co. Ltd., provides an easy way to determine the proper conveyor belt width for handling bulk materials.

To use the nomograph, it is necessary only to know the tonnage of material to be moved per hour, its density in lb./cu. ft., conveyor speed (ft./min.), and a "material factor", "A", "B", "C", which depends on the characteristics of the material being handled.

Materials with sharp edges include ores, quartz, limestone, sinter, coal, coke, etc. Materials with round edges include items such as cement, clinker, granulated products, gravel, etc. Powdered materials generally are obtained by grinding and include ore concentrates, foundry sand, cement, etc. Although Sandvik developed the nomograph for use in specifying steel belt conveyors, it may also be used for other types of flat-belt conveyors.

As indicated by the example illustrated on the nomograph, to find the belt width recommended to carry 90 tons/hr. of a material weighing 60 lb./cu. ft. at a speed of 200 ft./min. and having a material factor of "C", one would locate 90 on the "tons per hour" scale and project a line through 60 on the adjacent "lb. per cu. ft." scale until it intercepts the "cu. ft. per hr." scale. A line is then drawn from this point through 200 on the "ft. per min." scale and extended to the "cu. ft. per ft." scale. From here the line is extended through the "material factor" designation "C" and the interception of this line with the final "width" scale indicates that a 24-in. belt should be specified.

The nomograph prepared by the Sandvik Steel Band Conveyor Co.



EXPERIMENTAL ELECTRONIC COMPUTERS

Experimental installations of electronic computers are being made in three of the National Coal Board's areas. These are part of a planned investigation into the application of electronic data processing to all aspects of wages accounting in the coal industry. Each of the installations, designed primarily for labour costing and pay-bill work for an area, will, as a first step, absorb this processing work for a number of collieries in the areas concerned. The economics of the systems and other advantages can be assessed, and the systems and equipment compared.

The calculation of earnings was chosen as the first subject for examination because the data processing involved is so complex. The wages system of the industry, particularly for pieceworkers, is complicated and involves a considerable amount of detailed work. The custom of team work, with pooled earnings shared by individuals, adds to the difficulty of the task.

Pay-bill, costing, and statistical information are now being processed on an International Business Machines type 650 computer for one of the Board's collieries (Chatterly Whitfield, in the North Staffordshire area of West Midlands Division), initially covering about 2,800 men.

Another installation, based on the British Tabulating Machine Co.'s type Hollerith 555 machines, is being installed at Dean and Chapter Colliery (Area No. 4 of Durham Division), where similar processing for 2,500 men is to be transferred wholly to operation on the new system.

A third installation, with a Powers-Samas Accounting Machines Programme Controlled Computer, is being developed in Cowpen Group (Area No. 2, Northern Division), and is expected to be in operation during 1959. Machine programmes have been devised, and are now being tested, to produce similar information to that processed in the other two installations.

MINING MISCELLANY

Caribbean Iron Mines Ltd., recently registered in Trinidad, has announced plans to begin mining operations on a 2,700-acre concession in the Northern Range. The concession was obtained in 1953 by Samuel S. Douglas, a British Guiana-born prospector.

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The Council of the Institution of Mechanical Engineers have decided to issue a new publication, to be known as the *Journal of Mechanical Engineering Science*. The new journal will be issued quarterly and will be available at subscription rates to members and non-members of the Institution. Its main purpose will be to provide a forum for specialized and scientific contributions in the field of mechanical engineering.

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A new National Lending Library for Science and Technology is being set up by the Department of Scientific and Industrial Research. The library will be located in part of the former Royal Ordnance Factory at Thorp Arch, near Boston Spa, Yorks. Existing large single-storey buildings will be converted into offices and book-stores, and the site provides adequate room for expansion in the future. The library will begin operating in 1961, and becomes fully operational during the following year.

★

A record coal output has been achieved during the past year by miners in 110 coalfields in New South Wales, Australia. Coal authorities estimate production for the year at 15,700,000 tons. Higher production was reached despite the fact that the work force of about 85,000 decreased by more than 2,000. The Minister for National Development, Senator Spooner, said more economic production now made it possible for Australia to compete seriously for overseas markets. Coal exports this year will approach 800,000 tons.

★

The railway, some 184 km. long, linking the copper deposits of Toquepala with the port of Ilo, Peru, was inaugurated on November 17. This will facilitate the transport of heavy equipment required for the exploitation of the deposits, which it is hoped to commence by the end of 1960.

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The date by which mechanics and electricians who take charge at mines of coal, shale, and fireclay, in the absence of the mechanical or electrical engineer, must have certain technical qualifications has been postponed until July 1, 1960. This is the effect of the Coal and Other Mines (Mechanics and Electricians) (Variation) (No. 2) Regulations, 1958, made by the Minister of Power. Sufficient qualified men will not be available by January 1, 1959, when it was originally intended to bring the regulations into effect.

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Large deposits of sodium and potassium nitrates have been discovered in the district of Balsas, Department of Amazonas, Peru, some twenty-six hours by road from Lima. Analysis of samples are said to show contents of up to 38 per cent.

★

The Chamber of Mines has recommended a three-year royalty exemption for new mining properties in the province of Saskatchewan, Canada, in order to step up exploration and increase job opportunities.

★

The Soviet non-ferrous metal industry has fulfilled this year's production plan ahead of schedule, the Soviet Central Statistical Board has announced in *Pravda*. By the end of this year, the announcement adds, output of copper, aluminium, lead, zinc, nickel, magnesium, cobalt, tin, titanium, and molybdenum will be considerably in excess of the plan targets.

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Cummins Diesel International Ltd. has been established to promote the sales and service of Cummins Diesel Engines in international markets. The company has headquarters at Nassau, in the Bahamas, with additional offices soon to be opened in Europe and South America. Though a wholly owned subsidiary of the Cummins Engine Co. Inc., Cummins Diesel will be independently staffed and operated. Cummins Diesel International Ltd. has already formulated plans for expanding the existing Cummins' network of 180 sales and service locations outside the United States and Canada, and studies are under way to determine the possibilities of establishing additional manufacturing plants to serve its world markets. Mr. L. E. Carr, for many years manager of Cummins' export distribution, has been named resident manager of the new company in Nassau.

PERSONAL

Lord Baillieu has retired as chairman of the Central Mining and Investment Corporation Ltd. He has been chairman since 1945. Mr. R. Walker has resigned his position as director of the Corporation. Sir Archibald Forbes will succeed Lord Baillieu as chairman. Mr. C. W. Engelhard has been appointed to the board of the Corporation, with effect from January 1, in place of Mr. R. Walker.

★

Mr. A. V. Conrad has been elected president of the British Overseas Mining Association for the ensuing year.

★

Mr. C. de G. Watermeyer has been appointed an assistant manager of Rand Mines Ltd.

★

Mr. R. Walker, M.B.E., is retiring from active business, and has resigned from the board of Selection Trust Ltd. Mr. S. D. H. Pollen, M.B.E., T.D., has been appointed a director of the company with effect from January 1, 1959.

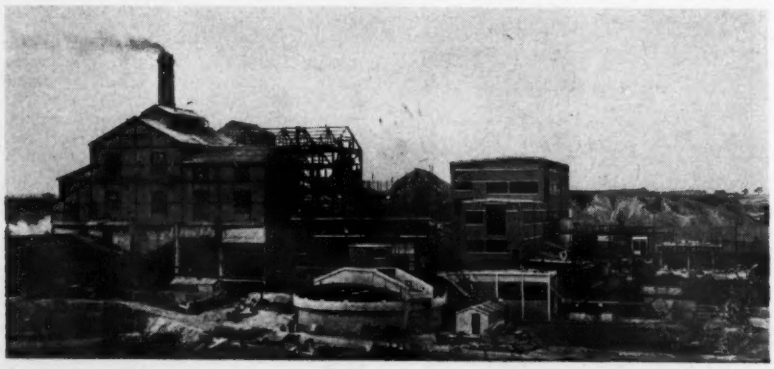
★

The Tanganyika Government has named three of the four directors who will represent it on the board of Williamson Diamond Mine at Mwadui, which it now owns equally and runs jointly with De Beers Consolidated Mines. They are Mr. M. A. Carson, Mr. David Makwaia, and Mr. M. J. Davies.

CONTRACTS AND TENDERS

The General Electric Co. Ltd. has received an order worth approximately £100,000 for a winding engine for Cortonwood Colliery (No. 1 Shaft) in the North-eastern Division of the National Coal Board. This order comprises a double-drum single-clutch winder, with drums 16 ft. in dia. by 6 ft. 6 in. wide, driven through reduction gears by a 3.3 kV. a.c. motor of 2,000 h.p. at a maximum speed of 356 r.p.m. When completed, the equipment will raise coal from a depth of 1,740 ft. and give a lifting capacity of 336 tons an hour. It will also serve to lift men to the surface from three levels. This order is the third in recent months placed by the National Coal Board with the General Electric Co. for 16 ft. dia. double-drum winders.

The recently completed coal preparation plant at South Kirkby handling 350 tons per hour of run-of-mine coal. The froth flotation plant can be seen under construction to the left of the coal preparation plant. The main contractors are Head Wrightson Colliery Engineering Ltd., a subsidiary of Head Wrightson and Co. Ltd.



Metals and Minerals

Metal Horoscopes for 1959

The advent of another year is traditionally a time for looking into the future and assessing the outlook for the next twelve months. The best informed forecasts are liable to be shattered by the unpredictable, but with this reservation authoritative estimates can be welcomed as at any rate a useful guide to probable future trends. From the economic horoscopes which have so far reached us, we have selected a few having special interest for the mining and metal industries. It will be seen that most of them emanate from the United States, where the omens are becoming increasingly favourable.

For suppliers of metals and minerals which are extensively used in iron and steel production, there is particular encouragement in the forecast by Mr. R. L. Gray, president of Armco Steel Corporation, who considers that this year United States steel production should exceed that of 1958 by 25 per cent, adding that the momentum of the present recovery could carry demand even higher. Mr. E. J. Hanley, president of Allegheny Ludlum Steel Corporation, also looks forward to a better year for steel in 1959. Last year, industry shipments of stainless steel products amounted to an estimated 490,000 s.tons—a decline of 21 per cent from 1957. Mr. Hanley expects that 1959 shipments will substantially exceed 1958 levels and perhaps 1957 levels as well (with, of course, a corresponding increase in the various materials used in the production of stainless chromium, nickel, and manganese).

Tinplate producers report that releases for January shipment, though far from spectacular, are much better than those received in either November or December. New bookings are also said by most producers to be very good, and prospects for the first half of 1959 are described as excellent. According to one producer, however, the tempo of shipments is not expected to reach full stride until March.

Mr. William Stolk, president of American Can Co., has predicted that United States production of metal cans in 1959 will total 41,800,000,000 units, compared with 41,000,000,000 last year, thus approximately equalling the record total of 1956.

For lead and zinc producers, the most heartening prediction is that of Mr. L. L. Colbert, president of the Chrysler Corporation, in whose opinion present signs indicate that next year the United States motor car industry could sell about a million more cars at retail in the home market than in 1958.

According to the Business and Defence Services Administration of the U.S. Department of Commerce, the trends now developing in the lead and zinc consuming industries indicate an increase of approximately 5 per cent in the consumption of lead in 1959, and 8 to 10 per cent in the consumption of zinc, as compared with last year.

The anticipated increase in motor car production, with resulting increased requirements for batteries, together with a gradual rebuilding of finished battery inventories, is expected to create a moderate increase in lead consumption by the storage producers. Little, if any, increase is anticipated in consumption for tetraethyl lead. Consumption in metal products, on the other hand, is expected to exceed the estimated 1959 figure of 400,000 s.tons by 6 to 7 per cent. Consumption of zinc for galvanizing is expected to increase about 5 per cent over the 1958 estimated total of 370 000 s.tons. Zinc consumption for the production of zinc alloys is expected to increase by about 12 per cent. Expectations of continued strong demands by the construction industry and other consumers indicates the likelihood of a 10 to 12 per cent increase in zinc requirements for brass.

A leading Canadian copper producer is looking to a moderate improvement in 1959 business, while seeing no boom ahead. Mr. J. R. Bradfield, president of Noranda Mines, notes the existence of considerable excess industrial capacity and the improbability of the recovery being accompanied by a rise in capital expenditure. He points out the inflationary implications of recent labour settlements, which portend a disproportionate rise in costs compared with productivity. The availability of surplus capacity foreshadows a continuation of intense competition in 1959. Price increases will probably be minor, and it is improbable that corporate earnings will recover to the levels of 1955 and 1956.

The position of base metals reflects the recent increase in consumption, adds Mr. Bradfield. The outlook for the next twelve months is for satisfactory demand and relatively stable prices. However, Mr. Bradfield does not overlook the serious effect on producers outside the United States of that country's imposition of import quotas on lead and zinc and the re-invoking of the 1.7 c. a lb. duty on copper imports.

Mr. Frank L. Magee, president of Alcoa, has predicted that the upward trend in United States aluminium consumption since the low point reached in the first quarter of 1958 will continue in 1959, and that shipments to consumers will exceed 1958 totals by better than 10 per cent. Mr. R. S. Reynolds, jun., president of Reynolds Metals, also looks for increased sales in 1959. He anticipates that the largest increases in aluminium usage will be in the construction and transport fields.

The U.S. Commerce Department considers that aluminium shipments by producers might rise by 20 per cent or more in 1959 as a result of increased use of the light metal in building and construction, motor cars, appliances, and other consumer goods, machinery, and other equipment.

The department expects that magnesium shipments will increase through

LONDON METAL AND ORE PRICES, JAN. 1, 1959

METAL PRICES

Aluminium, 99.5%, £180 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £190 per ton
Crude (70%) £190 per ton
Ore (60%) bases 19s. 6d./20s. 6d. nom. per unit, c.i.f.

Arsenic, £400 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 9s. 6d. lb.
Cerium (99%) net, £16 0s. lb. delivered U.K.
Chromium, Cr. 99% 6s. 11d./7s. 4d. lb.
Cobalt, 16s. lb.
Germanium, 99.99%, Ge. kilo lots 2s. 5d. per gram.
Gold, 250s. 4d.

Iridium, £19/£21 oz. nom
Lanthanum (98/99%) 15s. per gram.
Manganese Metal (96% - 98%) £290
Magnesium, 2s. 3d. lb.
Nickel, 99.5% (home trade) £600 per ton
Osmium, £16/£17 oz. nom.
Osmiridium, nom.
Palladium, £5/£5 15s.
Platinum U.K. and Empire Refined £19 10s oz
Imported £17 10s./£18 0s.
Quicksilver, £74 0s. ex-warehouse
Rhodium, £40/41 oz.
Ruthenium, £13/£15 oz. nom.
Selenium, 50s. 0d. per lb.
Silver, 75¼d. f. oz. spot and 75¾d. f'd.
Tellurium, 15s./16s. lb.

ORES AND OXIDES

Bismuth	30% 5s. 0d. lb. c.i.f. 20% 3s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semifriable) 48% (Ratio 3:1)	£15 15s. 0d. per ton c.i.f.
" Hard Lumpy 45% (Ratio 3:1)	£15 10s. 0d. per ton c.i.f.
" Refractory 40%	£11 0s 0d. per ton c i.f
" Smalls 44% (Ratio 3:1)	£14 0s. 0d. per ton cli.f.
Baluchistan 48% (Ratio 3:1)	£11 15s. 0d. per ton f.o.b
Columbite, 65% combined oxides, high grade	nom
Fluorspar—	
Acid Grade, Flotated Material	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF_2)	156s. 0d. ex works
Lithium Ore—	
Petalite min. 3½% Li_2O	40s. 0d./45s. 0d. per unit f.o.b. Beira
Lepidolite min. 3½% Li_2O	40s. 0d./45s. 0d. per unit f.o.b. Beira
Amblygonite basis 7% Li_2O	£25 0s. per ton f.o.b. Beira
Magnesite, ground calcined	£28 0s./£30 0s. d/d
Magnesite Raw (ground)	£21 0s./£23 0s. d/d
Manganese Ore Indian—	
Europe (46% - 48%) basis 55s. 0d. freight	83d./85d. per unit c.i.f. nom.
Manganese Ore (43% -45%)	70d./75d. per unit c.i.f. nom.
Manganese Ore (38%- 40%)	50d./54d. per unit c.i.f. nom.
Molybdenite (85%)basis	8s. 11d. per lb. (f.o.b.)
Titanium Ore—	
Rutile 95/97% TiO_2 (prompt delivery)	£35/£36 per ton c.i.f. Aust'n.
Ilmenite 52/54% TiO_2	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%)	95s. 0d./100s. 0d. per unit c.i.f.
Vanadium—	
Fused oxide 95% V_2O_5	8s./8s. 11d. per lb. V_2O_5 c.i.f.
Zircon Sand (Australian) (65 - 66% ZrO_2)	£14 0s. per ton c.i.f.

Note.—The bullion market was closed on January 1, 1959, and the gold and silver prices are therefore those ruling on December 31, 1958.

1959 as military uses of the metal in missile programmes and lightweight items rises. Civilian consumption of the metal is also expected to rise. There is, however, unlikely to be any increase in primary production of magnesium, estimated at 30,000 s.tons for 1958, because producer inventories are large enough to supply the anticipated increase in consumption.

NICKEL PRICE UNCHANGED

International Nickel has resumed production at its Ontario plants after the three months' strike, which ended a few days ago with a new three-year wage pact, effective January 2, 1959, providing for a 2.2 c. an hour average increase on that date and additional amounts on January 2, 1960, and January 2, 1961. The company states that no price increase will be required by the wage increase on January 2 this year. The company has informed its customers that, in view of the long-term stability represented by the settlement, it expected to be able to continue its established policy of selling nickel at prices which would facilitate the development of new and expanded uses.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

Since the last report all markets, with the exception of tin, have developed a very firm undertone and in general, price levels have risen. It is felt in most quarters that this trend will continue into 1957, as sentiment has been helped by the developments in the financial field and also by the behaviour of Wall Street, the London Stock Exchange and the general value of sterling throughout the world. Against this, however, it must be stated that the statistical position of the metals is still not very favourable although it is better than was the case at the beginning of the year.

COPPER STEADY IN FACE OF INCREASING SUPPLIES

Although the actual price movement in the copper market has not been great, the overall situation has become more stabilized with all U.S. customs smelters now quoting 29 c. per lb. and with the Belgian price having moved up slightly to the equivalent of 28.15 c. per lb. New York or Antwerp. Demand has been reasonably good considering the time of the year, and it is not now expected that the recommencement of arrivals of Rhodesian copper in January will have very much effect on the price.

With metal once more starting to flow from the International Nickel Co.'s plant following the conclusion of the strike, all production centres are now in operation. In this context it is interesting to note that the Anaconda company will be raising their production capacity in Chile next year to 405,000 tonnes. The major part of this increase will take place at the El Salvador mine.

The latest statistics covering the consumption of copper by brass and wire mills and foundries confirm the opinion expressed that the October figures were unduly high, the November tonnage being reported as 110,487 s.tons against a revised October figure of 138,017 s.tons. New business booked also showed a marked decline, whilst stocks in hand were up almost 20,000 tons.

On the last day of the year came an announcement from the Board of Trade that it had now been decided to sell the whole of the remaining available stocks of copper, amounting to some 26,000 tons. Of this quantity 4,000 tons, consisting of cakes, would be sold by negotiation, whilst a further 11,500 tons would be offered to the original suppliers or their agents and the balance of approximately 14,500 tons would be sold by open tender, so as not to affect the market delivery. Pricing would extend over the period January to November, 1959, giving a rate of approximately 2,600 tons a month. In the market it is considered that this operation should have little effect owing to its very extended nature.

In the market itself turnovers have remained satisfactory, and the present condition of practically level prices between cash and forward metal is thought likely to continue at least during the month of January. The fact that stocks in official warehouses during the last fortnight have shown only a small reduction seems to confirm this point of view.

U.S. CANNING OUTLOOK BRIGHTER

The undertone of the tin market has remained weak. This is not surprising as interest has been at a very low ebb and there has been a considerable tonnage of new metal offered on the market. Stocks have shown reduction of some 300 tons over the last fortnight, which appears to indicate that there has been a reasonable offtake into industry. In America there are optimistic forecasts as to the future of the canning industry, which is expected to absorb appreciably more tin next year than in 1958.

The recent meeting of the International Tin Council resulted in a communiqué which was summarized here last week (page 728).

The Metal Exchange in particular is sorry to learn from the communiqué that Mr. Davey is retiring and their best wishes are extended to him for his future. Mr. Davey, who is a former chairman of committee of the Exchange, has been instrumental in building up the machinery whereby the buffer stock manager operates on the London Metal Exchange and, owing to his previous experience of the market, this has been done with the greatest efficiency and smoothness. The Eastern price on Wednesday was £781¼ per ton c.i.f. Europe.

OUTLOOK FOR LEAD AND ZINC

Contrary to the expectation of a number of experts, the lead price has continued in an upward direction. This may be due largely to the fact that barter deals involving 15,000 tons of lead are reported to have been negotiated with the United States, but even so there are still sizeable tonnages of the metal which remain to be disposed of and it is expected that some of this will arrive on the London market after the U.S. quotas for the next quarter have been opened and satisfied. Opinion in Australia is that there will be a surplus of the metal for some time to come, and although the expectation is that consumption in the U.S. will probably show an increase in the neighbourhood of 5 per cent, the effect of this will not communicate itself to the outside world so long as the present system of quotas is continued, and it seems unlikely that there will be any alteration in this respect until well into the year, even if then.

The zinc market has presented a far better picture and the backwardation still shows signs of widening still further, although it must be reaching the point at which Continental zinc will be attracted to the market. It seems that the backwardation is unlikely to disappear as there are no large tonnages of metal which are likely to find their way on to the London market. With shipments of metal from behind the Iron Curtain looking as if they will be less than in recent months, there is every reason for quiet optimism. In the U.S., it is estimated that next year's consumption of zinc may be as much as 10 per cent above that for 1958, but in this case also its effects will be purely in the domestic market owing to the quota system.

WHAT HAS 1959 IN STORE?

It is always a dangerous thing to prophesy, especially in these days when political activities are so unpredictable and have such an offset on future markets such as the London Metal Exchange. However, politics aside, it looks as if 1959 will be a year during which prices will continue the upward movement started during the first quarter of 1958. Yet whereas the rise in the copper price will probably prove to be continuous, it would not surprise a large number of people if the lead and zinc markets—and more especially the former—were to suffer some recession before resuming the upward tendency. Whether or not the I.T.C. will succeed in stabilizing tin will also be shown during the coming year, but there are few who are prepared to say that success is assured. We are now at the end of a quota period and it is a distressing feature of the tin picture that at such a time the market should be as weak as it has been recently.

Closing prices were as follows:

	Dec. 18		Dec. 31	
	Buyers	*Sellers*	*Buyers*	*Sellers*
COPPER				
Cash	£220½	£220½	£220	£220½
Three months ..	£219½	£219½	£219½	£219½
Settlement ..	£220½		£220½	
Week's turnover	9,650 tons		10,825 tons	
LEAD				
Current ½ month	£72½	£72½	£71½	£71½
Three months ..	£72½	£72½	£72	£72½
Week's turnover	5,325 tons		6,275 tons	
TIN				
Cash	£758½	£759	£747	£749
Three months ..	£759	£759½	£749½	£750½
Settlement ..	£759		£749	
Week's turnover	650 tons		980 tons	
ZINC				
Current ½ month	£75	£75½	£75½	£76
Three months	£71½	£72	£72½	£73
Week's turnover	8,600 tons		8,925 tons	

London Metal and Ore Prices appear on page 17.

Mining Finance

Developing the O.T.C. Concept

It is well-known that the introduction in the 1957 Finance Act of Overseas Trading Corporations as a new class of company was in no small part due to the efforts over many years of the British Overseas Mining Association to convince successive Chancellors of the great handicaps under which British overseas mining enterprises were operating — handicaps which had resulted since 1939 in the complete cessation of the British registration of new overseas mining companies.

The new tax arrangements rectified a wholly unjust position as far as those companies able to qualify were concerned. Nevertheless, there still remain companies whose business, although analogous with that of other organizations which have been granted O.T.C. status, fails to qualify them for tax concessions.

It is with these companies that B.O.M.A. is now concerned, and in his presidential address this week, Mr. Clifford Waite drew attention to some of the more important drawbacks of the O.T.C. provisions as they now stand. In particular, he pointed to the anomalous position of overseas subsidiaries of U.K. companies. Although the O.T.C. system, as visualized and recommended by the Royal Commission on Taxation and Profits, was intended to apply to these companies, they were excluded from the 1957 Act. This is a matter of considerable importance, not only for companies at present operating mines through subsidiaries, but also from the point of view of the extension of Britain's interest in overseas fields, whether new or established. The trend towards nationalism in many of the territories in which British capital is likely to seek opportunity increasingly means that establishing a local subsidiary is often a political necessity. O.T.C. legislation in its present form acts as a disincentive to the formation of such subsidiaries, and it is to be hoped that the 1959 Finance Bill will rectify the situation.

These comments apply equally to the situation regarding finance companies. These companies, which are an essential element of the financing and management of Britain's overseas mining industry, are specifically excluded from the O.T.C. relief in spite of the fact that London's finance houses are the genesis of almost all British overseas mining enterprises. In the present climate of more liberal fiscal policy, considerations of loss of revenue must surely be outweighed by the advantage to this country of sustaining Britain's share in the ownership of mineral resources throughout the world.

Another field of endeavour in which B.O.M.A. is active is that of education. Extracts from Mr. Waite's speech are on page 22, where details of progress in this sphere are given.

WEST WITS' COMING ISSUE

At the annual meeting of West Witwatersrand Areas, Mr. P. S. Hammond, the chairman, said that Treasury consent had been obtained to the raising of up to £1,850,000 by a rights issue to members. It will be remembered that West Wits have already announced the intention to raise about £1,700,000 for various purposes, including the financing of the company's interest in Western Deep Levels, and the rebuilding of the combined working capital of West Wits and New Consolidated, Free State Areas (which West Wits recently acquired). At the meeting, the necessary resolutions were passed raising the unissued capital to 1,288,288 shares, and it is now announced that a circular will be posted to shareholders on January 6 giving precise details of the number of shares to be issued, and the price at which they will be offered.

It is obviously difficult to predict the terms of the issue with any exactitude. Nevertheless, assuming that the new shares are issued somewhere around 50s., it can be said that the rights will amount to perhaps two new shares for every sixteen or seventeen held.

THE PICTURE AT MAWCHI

Lieut.-General Sir Ernest Wood, the chairman of Mawchi Mines, recently visited Burma to gauge at first hand the position of the joint venture company, which the Burmese Government owns in partnership with Mawchi. His findings, which were published a few days in advance of Monday's meeting, make sombre reading.

When the new board took over in September, it was found that the joint venture had spent some £375,000 in the first fourteen months of operations, and had no further liquid funds available. This indicated a loss during the period of about £250,000. Some of this was due to the effects of the fire in the company stores during an insurgent attack last July, but had the fire not occurred the financial position would still have been desperate.

On the second day of the visit, a serious security incident led to the entire overseas staff at the mine intimating its intention to leave the mine as soon as those wounded in the incident were sufficiently recovered to be moved. This meant that the original object of the visit had to be postponed, and all efforts devoted to preventing a complete shutdown by putting the mine on a care-and-maintenance basis. The directors were successful in this, and for the time being, the commitments of the London company in Burma will be limited to about £750 per month. This, however, added to the London expenses, exceeds Mawchi's present rate of income, which is derived from bank deposits and treasury bills. General Wood, therefore, gives notice that the board will feel itself free to make any investments it considers necessary in order to maximize income, consistent with retaining sufficient liquidity for such eventualities as re-opening the mine. Although another member of the Paringa board, Major J. C. du Parc Graham, is now director of Mawchi, at the meeting General Wood once more disclaimed any intention of a link-up with Paringa.

As for the future, General Wood believes that the spirit of the Burma Government lends hope to the possibility of completing, in the first half of 1959, negotiations with regard to further finance. As far as security is concerned, the fact that the military commander of the Mawchi district is now an *ex officio* member of the joint venture board is, perhaps, a hopeful sign.

WITBANK AND THE LABOUR SHORTAGE

In common with other South African coal producers, the two major problems facing Witbank Colliery are a low controlled price for the product, and a severely fluctuating native labour supply. The first of these is outside the company's control, but dependence on an irregular labour supply can be lessened in several ways, the most important of which is mechanization.

This is the background to the heavy appropriations for capital expenditure which Witbank has had to provide in recent years. Early in 1958, a modernized underground haulage system was brought into operation at a cost of £205,483. Following this, a mechanical loader and two shuttle cars have been commissioned on No. 4 seam, and, by next August, it is anticipated that two complete units will be in operation. The total cost of this equipment will be about £165,000, of which £49,000 has been provided so far.

As far as Witbank's profits are concerned, the only result in the current financial year will presumably be a reduction in the capital expenditure appropriation from the 1957/8 figure of £200,587. The recent increase in the controlled price for coal will probably do no more than cover the inevitable cost increases, so that next year, there is little prospect of a further increase over the current dividend rate of 8s. per annum, unless the company is prepared to reduce the carry-forward still further. In any case, however, the prospects for an improvement in the following year, assuming demand to be at least maintained, must be rated as promising.

STANLEIGH IS MILLING 70,000 TONS MONTHLY

Production at Stanleigh Uranium Mining's Blind River property is now running at about 70,000 tons per month, only about 10,000 tons below capacity. This was revealed by Mr. A. W. McNeil, general manager of the corporation, at the annual meeting in Toronto. He said that mill grade was currently 2.06 lb. per ton with recovery around 95 per cent. About 30 per cent of mill feed was coming from conventional mining methods, and by next June the mine will be completely changed over to this method. Output in the first six months of the 1958/9 financial year is estimated at 712,700 lb. of U_3O_8 from the milling of 370,000 tons of ore.

Stanleigh is unusual among Blind River mines in that it has an interest in the Anderson Lode uranium field near Mount Isa, Australia. Drilling on this prospect has so far indicated 300,000 tons of ore grading approximately 4 lb. uranium oxide per ton. In Canada, the corporation's contract with Eldorado is for uranium to the value of some $90,000,000 and expires in 1963. There is also an option to purchase further supplies up to December, 1966. At the meeting, Mr. McNeil said that existing ore reserves were sufficient to meet the contract, while the corporation still has favourable areas to explore.

Financial News and Results

New B.A. Offer.—A further offer has been made for stock in British Aluminium by a powerful group of London financial interests. The alternatives now facing the stockholder are to accept the T.I. offer of one T.I. share and 78s. cash for each £2 of B.A. stock; to accept the new offer of 82s. for up to half of any individual holding; or to do nothing. In either of the last two cases the proposed B.A.-Alcoa partnership would take effect.

R.S.T. Informal Meetings.—This year's informal meetings of shareholders in Rhodesian Selection Trust and Roan Antelope will be held in London on January 15, and in New York on February 3. The chairman of R.S.T., Sir Ronald Prain, will present a report at each meeting.

Anglo-Burma Tin.—At the annual meeting of Anglo-Burma Tin on December 17, the chairman, Mr. F. R. Cottell, said that the improvement in the results of the joint venture company in the year to September 30 last was encouraging. In view of this, the board felt fully justified in pursuing a waiting policy with regard to this investment. This, however, would not prevent the directors considering any suitable opportunity to turn the capital value of the holding to account.

Anglo's Welkom Option.—Welkom Gold Mining have announced that the option held by Anglo American over 1,250,000 shares, which expired on December 30, was not taken up. This was, of course, hardly surprising, in that the highest price reached by Welkom shares this year has been 23s. 6d., while the option price was 27s. 6d.

Turner and Newall Acquisition.—Rhodesian and General Asbestos, a mining subsidiary of Turner and Newall, is to buy the entire issued capital of Rhodesian Asbestos at a reported price of £1,640,000. Rhodesian Asbestos operates a large mine and mill in the Mashaba district, and has recently been running at a reduced rate of 12,000 tons annually.

John Summers' Profits Higher.—John Summers and Sons increased their net profit after all charges to £4,848,404 in the year ended September 27, 1958. This compares with £4,259,253. A final dividend of 10 per cent is recommended, making a total of 16 per cent, compared with 14 per cent (partly on a lower capital) last year. Meeting, February 5.

New Year Honours List.—As usual, the New Year Honours List contains a number of names associated with the mining industry. Earl Alexander of Tunis who, in addition to being chairman of Northern Aluminium is a director of Aluminium Ltd., Aluminium (Canada), and Barclays Bank, has been appointed to the Order of Merit, while Mr. S. E. Clotworthy, managing director of Northern Aluminium, receives the C.B.E. The tin industry will welcome the award of the C.M.G. to Mr. Clifford Waite, chairman and joint managing director of Consolidated Tin Smelters.

Other recipients of the C.B.E. include Mr. Maurice Cook, chairman, Metals Division, Imperial Chemical Industries; Mr. P. T. Fletcher, deputy-managing director, Industrial Group Headquarters, Risley, Atomic Energy Authority; Mr. V. T. Hockin, commissioner of mines, Tanganyika; Mr. R. W. Parker, chairman, Scottish Division, National Coal Board; and Mr. J. E. Henshaw, lately divisional inspector of mines and quarries, Ministry of Power.

Mr. H. N. Wood, managing director, Hugh Wood and Co., and Mr. H. C. Murrells, tropical manager of the Witwatersrand Native Labour Association, receive the O.B.E.

Christmastime.—Once again *The Mining Journal* received a delightful variety of calendars, diaries and Christmas cards from friends and well-wishers. We would like to acknowledge the good wishes for the New Year received from the following: Anderson, Boyes and Co. Ltd.; British Insulated Callender's Cables Ltd.; The Butterley Co. Ltd.; Cementation Co. Ltd.; Craelius Ltd.; Cyprus Government Office; Denver Equipment Co.; The General Electric Co. Ltd.; Holman Bros. Ltd.; Hunting Group of Companies; International Harvester Co. of Great Britain Ltd.; International Nickel Co.; Mavor and Coulson Ltd.; Rip Bits Ltd.; Westfalia Lunen and Hugh Wood and Co. Ltd. We would like to take this opportunity of again wishing all our friends at home and abroad a Happy and Prosperous New Year.

LONDON MARKET HIGHLIGHTS

Dominating factors on the London Stock Exchange during the past few days were sterling's latest step towards full convertibility, and news of the devaluation of the French franc. The sterling moves provided an after-Christmas tonic for industrial shares, the *Financial Times* index closing 1958 triumphantly at a new peak. Mining share markets, however, were little affected by the strength of the pound, and with interest so largely concentrated on the industrial sections, business was subdued.

A more dampening influence was the devaluation of the franc. This had virtually no effect on industrials, but it was taken very seriously by mining shareholders. For some weeks past, a steady demand had come from Paris for gold and copper shares as a means of hedging against such a devaluation. It was reasonable enough to assume that the writing down of the franc having become a *fait accompli*, some of the recently bought stock would be sold back to London again.

In the event, not a great deal of Paris selling was seen, but what there was sufficed to depress copper shares at times, particularly Chartered, which fell to 72s. 3d. for a while. The market later rallied when the selling dried up, and was hardly moved by the Board of Trade's announcement of the intended sale of the rest of its copper stocks.

The events of the week had little effect on other base metal sections. The feature here was the strong advance to 64s. 3d. in Consolidated Zinc, largely inspired by consideration of its industrial interests.

South African gold shares occasionally wilted under quite modest offerings from Paris. Free State Geduld, for instance, eased to 115s. and were not helped by an outbreak of option selling. Even so, two bright spots emerged to enliven the market. The first of these was Buffelsfontein, the shares of which steadily advanced 3s. 3d. to a peak of 48s. at one time. Cape buyers were held responsible for the move, and it was clear that they were anticipating high development values in the quarterly due this month.

The other share to demand attention was Winkelhaak, and again it was largely Johannesburg demand that raised the price to a record 20s. 6d. Hopes were that the mine would produce a good maiden profit when the December S.A. mining returns appear next Tuesday.

The new Corner House Investment duly made its appearance on the appointed day of Christmas Eve. Despite the rather difficult trading conditions on that day, the newcomer got off to a good start by establishing a premium of 3s. over the issue price of 20s. (par). On the Monday after Christmas, the shares eased back to 21s. 9d.; they later recovered to 22s. 9d.

While the gold share market could see no immediate benefits in the growing strength of sterling, there was no doubt that the trend could have important repercussions for the future. With its approach towards full convertibility, the pound is already gaining at the expense of the dollar. If this trend continues, as many Americans seem to expect, some readjustment of the value of the dollar in terms of other currencies will have to be made, and it is hardly likely that this would occur without a world-wide rise in the gold price.

United States investors are already alive to these possibilities. Much of the recent firmness of Kaffirs has stemmed from United States demand coming via Johannesburg and Switzerland. And the success of the £8,000,000 Dillon Read sponsored American-South African Investment formed to acquire for United States investors gold bullion and mine shares is almost certain to result in other such trusts being launched. Apart from the growing chances of a rise in the gold price, the American investor must soon begin to tire of the shrinking yields offered on United States equities, while the feeling is growing that the rise on Wall Street, as mirrored by the Dow Jones index, may have been overfast.

Meanwhile, gold shares offer plenty of attraction on their own merits; earnings and dividends are steadily expanding, and yields are still competitive. Evidence that the Kaffir market has at last emerged from its long bear trend is provided by the *Financial Times* gold mines index, which rose in 1958 from January's 68.0 to December's 88.1. Provided that the growth of investment in United Kingdom industrial shares does not obscure the merits of Kaffirs, 1959 should see a further rise in Kaffir prices. It can only be hoped that this will be an orderly progress, and that what is really a very small market in relation to American industrials will not be swamped by a wave of sudden panic switching.